

## Chapter 2

# Battle Command

### SECTION I—COMMAND AND CONTROL

#### COMMAND AND CONTROL PROCESS

2-1. The C<sup>2</sup> system provides the commander with the structure and means to make and convey decisions and to evaluate them continuously. The decisions and higher-level intent are then translated into productive actions. The decisions are based on the information derived from the C<sup>2</sup> process, which consists of the following four steps:

- Acquire information.
- Assess whether any new actions are required.
- Determine what these actions should be.
- Direct subordinates to take appropriate actions.

#### MILITARY DECISION MAKING PROCESS

2-2. To effectively accomplish the mission, the commander and his subordinates follow the nine-step, MDMP. The MDMP is discussed in great detail in FM 101-5.

#### COMMAND AND CONTROL TECHNIQUES

2-3. Effective C<sup>2</sup> is a never-ending process. The commander must develop techniques and procedures that create an expeditious flow of information through the C<sup>2</sup> process. These techniques and procedures should be an essential focal point in the SOP. Effective techniques should create a simple, timely, brief, and clear projection of information. Techniques are discussed in FMs 17-95, 24-1, 101-5, and 101-5-1.

### SECTION II—COMMAND AND STAFF RESPONSIBILITIES

#### SQUADRON COMMANDER

2-4. The commander analyzes and restates the mission, designs the concept of operations, organizes the forces, and provides support to subordinate units. He issues mission orders with sufficient details for his subordinate to plan and lead their units.

2-5. When not in battle, the commander operates from the vicinity of the TOC.

2-6. During battle, the commander positions himself where he can best make decisions during critical points of the battle. He positions himself to

follow and influence operations and maintains communications with higher, lower, and adjacent units.

2-7. The commander must know the enemy; his organization, his weapon systems, and how he fights. He must know the terrain over which his unit will fight and the adjacent terrain the enemy may use to support or reinforce. The commander must be aware of the operational limitations of his unit. He ensures air and ground cavalry efforts are fully synchronized to accomplish the mission.

## **EXECUTIVE OFFICER**

2-8. The XO is second in command and the principal assistant to the commander. He directs, supervises, and ensures coordination of staff work except in those specific areas reserved by the commander. During combat operations, the XO is positioned in the TOC and his duties are as follows:

- Directs and coordinates CS and ensures continuous CSS.
- Assisted by the operations sergeant, the XO maintains routine reporting, coordinates the activities of the liaison personnel, and always plans ahead.
- During lulls in the battle, the XO may go to the trains and personally determine the status of CSS operations.
- Remains current on the tactical situation and is prepared to assume command on a moment's notice.

## **COMMAND SERGEANT MAJOR**

2-9. The CSM acts in the name of the commander when dealing with the other NCOs in the unit and is the commander's primary advisor concerning the enlisted soldiers. He is the most experienced soldier in the squadron and keeps his finger on the pulse of the command. He focuses his attention on any function critical to the success of the operation. The CSM assists the commander in the following ways:

- Trains troop first sergeants.
- Monitors NCO development, promotions, and assignments within the squadron.
- Plans and assesses soldier training tasks. Ensures soldier training tasks are identified and trained to support the performance of collective (unit) METL tasks.
- Monitors the level of proficiency of training and morale of subordinate units.
- Provides recommendations and expedites the procurement and preparation of replacements for subordinate units.
- Monitors food service and other logistics operations.
- Conducts informal investigations.
- Assists in controlling squadron movement through a breach in a critical obstacle or at a river crossing.

- Makes coordination for a squadron passage of lines.
- Leads the squadron advance and/or quartering party during a major movement.
- Assists in the CSS effort during the battle when the XO is in the TOC or forward.

## **ADJUTANT**

2-10. The S1 has primary responsibility for all personnel matters. The S1 normally operates from the CTCP collocated with the S4. He shares supervisory responsibility for logistics with the S4. The S1 and S4 must cross-train to enable them to conduct continuous operations.

## **INTELLIGENCE OFFICER**

2-11. The S2 is responsible for collecting and providing current information and analyzed intelligence of tactical value concerning terrain, weather, and enemy for all commanders and the staff to facilitate planning and execution of combat operations. The S2 performs the following functions:

- Converts the information requirements of the commander into PIR.
- Facilitates the IPB process.
- Participates in the development of the decision support template.
- Coordinates intelligence activities in the TOC.
- Frequently updates the XO on the enemy situation.
- Works closely with the FS element and assistant S3 to ensure information is passed throughout the staff.

## **OPERATIONS OFFICER**

2-12. The S3 is responsible for matters pertaining to the organization, employment, training, and operations of the unit and supporting elements. He monitors the battle, ensures the necessary CS assets are provided when and where required, and anticipates developing situations. The S3, assisted by his operations sergeant and assistant, maintains routine reporting, coordinates the activities of liaison personnel, and is always planning ahead. The S3 ensures his soldiers and equipment are organized, trained, and maintained to support the XO in the TOC. The S3 maintains close coordination with the S4 for CSS status.

## **SUPPLY OFFICER**

2-13. The S4 provides logistics information to the squadron commander. He functions as the squadron's logistics planner. He coordinates with troop first sergeants and XOs about status of equipment and supplies. He coordinates with supporting units and HHQ staffs to ensure logistics support is continuous. The S4 is in charge of the CTCP.

**AIR DEFENSE OFFICER**

2-14. The ADO, after coordinating with the S2 for the aerial portion of the IPB, provides the commander with recommended AD priorities. The ADO works closely with the ALO, FSO, and flight operations officer to coordinate A<sup>2</sup>C<sup>2</sup> matters that have either direct or indirect impact on the regiment or squadron.

**AIR LIAISON OFFICER**

2-15. The ALO is an Air Force officer who is a member of the TACP. He may serve as a FAC or have additional officers assigned to the TACP as FACs. He advises the commander and staff on the employment of offensive air support, including CAS, battlefield air interdiction, joint suppression of enemy ADs, aerial reconnaissance, and airlift.

**AVIATION UNIT MAINTENANCE TROOP COMMANDER**

2-16. The AVUM troop commander is responsible for preventive maintenance, repair, and parts replacement for aircraft and aviation equipment. He is also responsible for evacuation of unserviceable modules, components, and end items. He coordinates closely with the S4.

**CHAPLAIN**

2-17. The chaplain and chaplain assistant compose the UMT. The UMT operates out of the combat trains. The UMT provides pastoral care, counseling, and advice to the commander on matters of religion, morale, and morals.

**CHEMICAL OFFICER**

2-18. The chemical officer advises the commander on NBC defensive operations, decontamination, smoke and/or obscurants, flame, and NBC reconnaissance operations. The chemical officer, assisted by an NCO, also serves as an assistant operations officer in addition to NBC duties. The chemical officer works directly for the S3 and is responsible for integrating NBC defense into all aspects of unit training.

**SIGNAL OFFICER**

2-19. The signal officer advises the commander on all signal matters, including the location of CPs, signal facilities, best uses of signal assets, and the use of signal activities for deception. He monitors the maintenance status of organic signal equipment, coordinates the preparation and distribution of the SOI, and supervises the communications security accounting activities.

**ENGINEER OFFICER**

2-20. The squadron engineer is the commander or leader of the DS, attached, or operationally controlled engineer unit supporting the squadron. Because of his duties, he cannot be at the squadron TOC continuously, but he is in

the TOC during planning and is part of the orders group. He is the terrain expert and works closely with the S2 in the IPB process to develop an accurate detailed analysis of the effects of weather on terrain and how these effects impact on the mission. The engineer officer provides the commander and staff information on the enemy's engineer capabilities. In the absence of an engineer unit, the S3 assumes responsibility for engineer functions.

### **FLIGHT OPERATIONS OFFICER**

2-21. The flight operations officer is part of the S3 section and works in the TOC for the S3. He is assisted by an NCO and flight operations specialist. He is the operations expert on Army aviation in the squadron. He assists in planning and managing the integration of air cavalry in the squadron's scheme of maneuver. The flight operations officer's responsibilities include the following:

- Coordinate with the aviation brigade for aviation support.
- Receive A<sup>2</sup>C<sup>2</sup> control measures and directives from the aviation brigade or division A<sup>2</sup>C<sup>2</sup> element.
- Incorporate applicable A<sup>2</sup>C<sup>2</sup> measures into the scheme of maneuver.
- Maintain A<sup>2</sup>C<sup>2</sup> overlay in squadron TOC.
- Establish and monitor flight-following net (air traffic control network) for squadron aircraft, when required.
- Maintain squadron flying hour program and monitor fighter management.
- Disseminate A<sup>2</sup>C<sup>2</sup> changes to the ACT and the AVUM (F Troop) commander.
- Assist in operations of the S3 section.
- Assist the S3 and the FSO in planning required SEAD and J-SEAD fires.

### **FIRE SUPPORT OFFICER**

2-22. The primary duty of the FSO is to help the commander integrate all fires to support the scheme of maneuver. This includes planning, coordinating, and executing FS. He is also responsible for coordinating with the S3 and the flight operations officer for required SEAD and J-SEAD fires. The FSO coordinates the efforts of subordinate FSOs and maintains digital and voice communications to supporting artillery.

### **HEADQUARTERS AND HEADQUARTERS TROOP COMMANDER**

2-23. The HHT commander serves as the headquarters commandant for the main CP and answers directly to the squadron XO. The HHT commander is responsible for the support, security, and movement of the main CP and for supporting all elements of the HHT. He normally delegates the function of maintenance support to the HHT XO and the function of supply to the HHT first sergeant. Although he is a unit commander, not a staff officer, the squadron HHT commander fulfills a unique role.

## **LIAISON OFFICER**

2-24. LNOs are in the S3 section of the regiment and squadron. They represent the commander at the headquarters of another unit for effecting coordination and for promoting cooperation between the two units. Through personal contact, they facilitate the exchange of information and ensure mutual understanding and unity of purpose before, during, and after combat operations. LNOs operate from the TOC where they are normally briefed and debriefed by the XO or TOC shift leader.

## **REGIMENTAL SUPPORT SQUADRON COMMANDER**

2-25. The regimental support squadron commander is the regimental commander's main CSS operator. He advises the regimental commander concerning supply, maintenance, field and health services, and implementation of the CSS functions throughout the regiment. The regimental support squadron commander has OPCON over all units and elements within the RSA for movement, security, terrain management, and synchronization of sustainment activities. He coordinates and implements plans for assigned rear operations responsibilities within the RSA. He usually works through the regimental XO and coordinates with the regimental S4. He is located in the rear CP.

## **SQUADRON MAINTENANCE OFFICER**

2-26. The SMO is responsible for coordinating all activities including recovery, evacuation, repair, and replacement of combat equipment to sustain the operational readiness of the squadron. The SMO is responsible for all ground tactical equipment. The SMO coordinates and supervises the efforts of the squadron maintenance platoon and exercises staff supervision over unit maintenance in the troops. He also functions as the maintenance platoon leader. The maintenance warrant officer assists the SMO by providing technical assistance and supervision to the maintenance platoon. During combat, the SMO operates from the combat trains or a UMCP. In the absence of the S4, he controls the combat trains.

## **SURGEON**

2-27. The squadron surgeon advises and assists the commander on matters concerning the fighting strength of the command to include preventive, curative, and restorative care. He advises the commander on the combat health support of the command and of the medical threat present in the occupied or friendly territory within the commander's area of responsibility. He determines requirements for the requisition, procurement, storage, maintenance, distribution, management, and documentation of medical equipment and supplies. The regimental surgeon is normally located at the clearing station in the regimental support area. The squadron surgeon and the physician's assistant operate the squadron aid station located in the combat trains. The division cavalry surgeon is also a qualified flight surgeon.

## **SQUADRON TACTICAL OPERATIONS OFFICER**

2-28. The tactical operations officer is part of the S3, in the RAS, and works in the TOC for the S3. He is assisted by an NCO and flight operations specialist. He is the operations expert on Army aviation in the squadron. He assists in planning and managing the integration of air cavalry in the squadron's scheme of maneuver. The tactical operations officer's responsibilities include the following:

- Coordinate with the aviation brigade or regiment for aviation support.
- Receive A<sup>2</sup>C<sup>2</sup> measures and directives (air tasking order, air control order, and SPINs) from the HHQ A<sup>2</sup>C<sup>2</sup> element.
- Incorporate applicable A<sup>2</sup>C<sup>2</sup> measures into the scheme of maneuver.
- Maintain A<sup>2</sup>C<sup>2</sup> overlay in squadron TOC.
- Establish and monitor flight following network (air traffic control network) for squadron aircraft, when required.
- Disseminate A<sup>2</sup>C<sup>2</sup> changes to the ACT and the AVUM and/or aviation service troop commander.
- Assist in the operations of the S3 section.
- Assist the S3 and the FSO in planning required SEAD and J-SEAD fires.
- Operate the AMPS, and disseminates mission loads to subordinate units.
- Develop, plan, coordinate, and brief EW operations.
- Establish and monitor squadron, regimental, and division command networks.
- Maintain current situation to include current BDA and spot reports and passes reports to HHQ.

## **AIR CAVALRY TROOP COMMANDER**

2-29. The ACT commander has the immediate responsibility for tactical employment of the troop. The troop commander commands and controls all assigned air and ground assets while accomplishing all assigned missions and preserving the combat power of the force.

2-30. To accomplish the mission, the ACT commander interfaces with HHQ and supported units for receipt of missions. Given the complexity of the aircraft systems, extensive coordination requirements, limited planning and rehearsal time, and limited number of AMPS planning stations, the air troop commander should focus on the use of the planning cell concept in mission planning and execution.

2-31. During tactical operations, the ACT commander may command the troop from either the air or from the ground during periods when continuous operations dictate. However, the troop commander has very limited C<sup>2</sup> capability while on the ground.

## **AIR MISSION COMMANDER**

2-32. Designation of an AMC is a command responsibility when two or more aircraft work together as a flight. This responsibility includes ensuring that the aircrews adhere to mission briefing parameters, authorizing deviation from the mission, and handling tactical, administrative and logistics interface with supported units.

2-33. The AMC commands and controls the flight during a tactical mission. The air mission commander will—

- Interface with higher and supported units for receipt of missions.
- Provide detailed guidance to the troop planning cells and reconnaissance crews.
- Choose the team and/or troop COA upon contact with the enemy and controls the execution of the COA.
- Coordinate with GCTs or other maneuver units operating in the ACTs AO.
- Coordinate indirect fires and TACAIR support.
- Coordinate with attack helicopters and/or ground troop commanders for target and/or battle handover.
- Update higher commanders on the current situation and submit required reports.
- Synchronize arming and refueling operations for maximum effectiveness and mission accomplishment.
- Ensure combat information is disseminated properly both during and after the mission.
- Conduct the mission debrief and/or AAR.

2-34. The wide range of responsibilities and tempo of coordination for support and integration of fires demands that the AMC delegate responsibilities among the crew members in the flight based on their individual skills and troop SOP. If not delegated, the complexity of the duties in a combat situation can easily lead to task saturation and significantly reduce the troop's combat effectiveness.

## **PLATOON LEADERS**

2-35. When the ACT conducts tactical operations, platoon leaders may serve as air mission commanders and/or team leaders based on experience. The most senior platoon leader may also serve as the troop XO, and assist in logistics and operational duties of the troop commander.

2-36. During planning, recovery, and AA operations the platoon leader's role focuses on preparation for the next mission. The platoon leader will—

- Ensure that each platoon member is prepared for the mission.
- Monitor the fighter management status of platoon members.
- Interface with the troop maintenance officer and platoon sergeant to verify aircraft status and monitor the maintenance effort.
- Supervise unit movements.



- Advise the troop commander on platoon issues such as aircraft maintenance, personnel status, and CSS requirements.

## **TEAM LEADERS**

2-37. The ACT team leaders are responsible to the troop platoon leader for the tactical employment of the team. Team size is dictated based on the nature of the mission. Team leader selection should be based on tactical experience. The team leader duties include—

- Accomplishing the assigned mission.
- Planning mission at the team level.
- Providing personnel to man and supervising the work of the planning cells.
- Conducting mission brief for team level missions, if directed.
- Providing tactical control of the team, such as determining formations, ASE configuration settings (see appendix H for detailed instructions), movement techniques, assigning and prioritizing tasks, developing the situation, choosing COAs, and method and execution of weapons employment.
- Interfacing with higher and supported units.
- Being prepared to assume responsibility as the platoon leader and/or air mission commander.

## **FIRST SERGEANT**

2-38. The 1SGs executes the squadron's CSS plan at troop level. He ensures the continuous operation of the CP. He coordinates medical, mess, supply, administrative, and personnel support with HHQ and subordinates. He also supervises AA activities and establishing the AA.

## **MAINTENANCE OFFICER**

2-39. The troop maintenance officers coordinate the troop's AVUM in addition to their operational flying duties. The use of a consolidated program with maintenance officers and platoon sergeants dividing work into shifts, maximizes the effectiveness of the work effort, supports the AA security plan, and ensures fighter management cycles for maintainers.

## **INSTRUCTOR PILOT**

2-40. During tactical operations, the troop IPs recommend appropriate TTP for each mission. Additionally, they assist in the crew selection process and act as the commander's SME on employment of aircraft systems and weapons.

**SAFETY OFFICER**

2-41. The SO monitors all troop operations to ensure safe operation and identify potential hazards. He assists the commander during the risk management process.

**AVIATION SURVIVABILITY EQUIPMENT OFFICER**

2-42. The ASE officer advises the commander on appropriate ASE techniques and procedures for each mission. He conducts the ASE portion of the risk management process.

**PILOT-IN-COMMAND**

2-43. The PC is responsible for the operation and security of the aircraft they command. The PC must be tactically, as well as technically, proficient in the units METL.

**SECTION III—COMMAND AND CONTROL FACILITIES****TACTICAL OPERATIONS CENTER**

2-44. The TOC is the primary C<sup>2</sup> structure for the squadron. It consists of those staff personnel required to conduct continuous current operations and to plan future operations. The squadron XO is responsible for TOC operations. The tactical situation may require the squadron XO to supervise the TOC when the commander and S3 are at the TAC CP. The TOC includes the S2 and S3 sections, communications platoon elements, TACP, FSE, and flight operations section. The TOC monitors operations around the clock and exercises C<sup>2</sup> of the current operation when a TAC CP is not employed. When not operating from the TAC CP, command vehicle, or an aircraft, the commander is normally at the TOC. An efficient method of TOC organization is to operate as three functional cells—operations, support cell, and future plans cell.

**OPERATIONS**

2-45. TOC personnel monitor and control current operations. Functional positions within the battle cell include a battle captain, an intelligence specialist, a FS specialist, a clerk-recorder, and RTOs. The battle captain (not rank specific) is an experienced member of the S3 section who continuously monitors current operations. He does not command the battle but performs battle tracking and makes operational decisions within his assigned responsibility. He alerts the commander, XO, or S3 to situations that meet the established CCIR or exceed his designated authority to control. The intelligence specialist receives incoming tactical reports and processes the intelligence information. The FS specialist expedites clearance of fires and coordinates for responsive fires. The battle cell remains operational even when the TAC CP has the battle. When communications allow, it monitors the actions of the TAC CP and is always prepared to assume control of the battle if the TAC CP is disabled.

### **SUPPORT CELL**

2-46. The support cell maintains unit status, receives and processes routine reports, and provides routine support to the TOC. The TOC NCOIC supervises this cell.

### **FUTURE PLANS CELL**

2-47. The future plans cell is activated as required to conduct planning for future operations. This cell consists of the tactical operations officer and/or battle captain, S2, FS NCO, NBC NCO, an S3 representative, and also includes all staff members involved in the military decision making process and orders preparation.

2-48. The TOC functions to sustain operations and will control the battle when the TAC CP is not employed. In addition, TOC personnel—

- Plan for future operations.
- Collate information for the commander.
- Provide reports to HHQ.
- Coordinate with higher and adjacent units.
- Coordinate A<sup>2</sup>C<sup>2</sup>.
- Analyze information for immediate intelligence.
- Acquire CS and CSS and coordinate their functions.
- Coordinate requirements for protection of rear operations.
- Coordinate and direct CS and CSS functions with the tactical and rear CPs to ensure that forward operating elements sustain operations.

2-49. The S3 selects the site for the TOC considering the factors of METT-T and recommendations from the HHT commander and signal officer. This location must allow good communications with HHQ, subordinate troops, and supported units. The TOC should be near suitable vehicular routes. It should also be out of the range of enemy medium artillery and away from prominent terrain features that the enemy could use as target-reference points. The TOC must be able to relocate frequently and operate with minimal electronic signature for extended periods. It must be well camouflaged to enhance survivability. The TOC displaces in either a phased movement or a single movement. The latter method is possible when a full-time TAC CP is employed. Communications with HHQ must be maintained at all times. Set up must be in the following phased manner:

- Battle tracking and/or controlling current battle.
- Security.
- Establish briefing area.
- Establish full TOC set up when situation permits.

### **TACTICAL COMMAND POST**

2-50. The TAC CP cannot operate continuously because of personnel and equipment limitations and future planning requirements. Therefore, it is usually employed only when the operation can be better controlled at a

location other than the TOC. The TAC CP is limited in physical size and electronic signature and can displace rapidly and frequently. The flow of the operation and the desires of the commander dictate movement of the TAC CP. The TAC CP is composed of required personnel from the S2 and S3 sections and is normally the responsibility of the commander or S3. An FSO, a TACP, and ATS assets may also be located at the TAC CP. A standard arrangement of the TAC CP may be stated in the unit SOP.

2-51. The TAC CP must maintain communications with the TOC, the troops, and HHQ at all times. The normal mode of communications at the TAC CP is frequency modulation (secured). The TAC CP assists the commander in controlling current operations. TAC CP personnel—

- Control maneuver forces.
- Coordinate JAAT operations.
- Analyze information for immediate intelligence.
- Control and coordinate immediately available FS.
- Communicate CSS requirements (Classes III and V) to the TOC.
- Coordinate with adjacent units and forward AD elements.
- Develop combat intelligence of immediate interest to the commander.

## **ALTERNATE AND REAR COMMAND POSTS, ASSEMBLY AREAS, AND FORWARD AREA ARMING AND REFUELING POINTS**

2-52. The squadron commander may designate an alternate CP to ensure continuity of operations during displacements or in case of serious damage to the TOC. The alternate CP may be the TAC CP, or a subordinate troop headquarters. Provisions for an alternate headquarters are normally established in unit SOPs.

2-53. The rear CP, located with the squadron CTCP, provides the CS and CSS required to sustain the squadron. It may be located in the BSA, RSA, DSA, corps support area, or another area where major organizational support facilities are located. The squadron S1 and S4 sections operate from this area and coordinate all required support with the TOC. The ranking or otherwise designated individual, normally the squadron S4 or S1, is the rear CP commander. The squadron XO monitors the operations of the rear area.

2-54. Troops are located near the TOC in dispersed AAs. This arrangement allows rapid reaction to mission requirements and provides limited security for the TOC. The squadron CTCP serves as the rear CP and consists of HHT support elements, the AHT, and the AVUM. These elements compose the squadron combat trains and are disposed to the rear of the TOC. Although its actual location depends on METT-T, the rear CP is usually collocated with a higher support area. Under some circumstances, the squadron HHT commander can control the squadron field trains and rear CP.

2-55. The HHT establishes FARPs in forward AAs to support combat operations. The location of the FARPs also depends on METT-T. The squadron S3 is responsible for coordinating the location and displacement of FARPs, and the XO is responsible for tracking statuses. Normally, the FARPs consist of Class III and/or Class V (fuel and/or ammunition) support,

maintenance support, and medical teams. FM 1-111 discusses FARPs in detail.

## **ASSEMBLY AREAS**

2-56. An ACT will likely be employed to perform reconnaissance of the squadron field trains area or the troop AA before occupation. The following items must be considered when a site is being selected:

- Overall suitability of terrain. (Be aware of man-made obstacles such as radio and/or TV towers and wires. These are critical factors when considering the amount of air traffic in and around the AA.)
- Site security and natural camouflage.
- Space for adequate dispersion of aircraft.
- Openings in the area to position aircraft and vehicles.
- Terrain that facilitates communications and water drainage.
- Access to ground routes to facilitate CSS operations for the squadron.
- Protection from indirect fires by reverse slope positioning and adequate distancing from enemy artillery.

## **TACTICAL ASSEMBLY AREA**

2-57. TAAs are usually used for short time periods, or for specific missions that require the troops to be positioned away from the squadron trains. Only the ACT's assets and a communications capability are located in a TAA. This area may be used if the squadron commander thinks the threat has the capability of identifying where his squadron field trains might be. With the use of threat radar, the area where aircraft land and depart can be identified. Based on threat capabilities, the squadron commander determines if the ACTs will be positioned with the squadron field trains or in the TAA. Since the TAA will have limited personnel for defense, the ACTs will have to use a reactive defense plan. The concentration of the troop's defense efforts will have to move toward the main attack instead of a 360-degree static defense. Armed troop aircraft in the TAA should be positioned so that they may be used in the defense.

## **FORWARD ASSEMBLY AREA**

2-58. The FAA for an ACT is small and is usually occupied for short periods. It is an area where troop elements can shut down before relieving another team or troop on station. This allows the troop to remain close to the battle so that it can react rapidly to changing tactical situations. It also allows the troop to perform limited maintenance without returning to the squadron field trains or TAA. If the troop commander elects to shut down in the FAA he must still maintain communications with HHQ.

2-59. The FAA is usually located near a FARP to hasten maintenance efforts conducted by crew chiefs or contact teams that are collocated within FARPs. The FAA may be collocated with the squadron or a brigade TAC CP. This facilitates the coordination and exchange of information between air and

ground elements. However, it increases the signature of the CP and therefore the probability of attack. Therefore, those selecting an FAA close to a CP must ensure that the aircraft signature will be minimized. Otherwise, FAAs should be located away from CPs. Aircrews occupying the FAA will monitor radio traffic to keep abreast of the tactical situation. They can then respond quickly if needed by the ACT commander.

2-60. Activities in the FAA are limited. Aircrews check their aircraft for possible battle damage and take care of personal needs. The FAA is positioned to support the ACT based on METT-T. Primary consideration is given to the vulnerability of the FAA to enemy indirect fires.

2-61. The FAA may also be located in an urban area where aircraft can be hidden behind or in the shadows of large structures. The ACT commander considers air avenues of approach into the FAA. Visual and radar detection by the enemy must be prevented. Varying covered and concealed routes into the FAA will help to ensure that the enemy does not locate the FAA.

## **SECTION IV—COMMAND AND CONTROL COMMUNICATIONS**

### **PURPOSE**

2-62. Communications are essential to cavalry operations. Fundamental to reconnaissance and security is the reporting of combat information. This information is of interest to other maneuver units as well as to corps or division staff and requires widest dissemination possible by eavesdrop or other means. Cavalry frequently operates over long distances, wide frontages, extended depths, and great distances from the controlling headquarters. Communications must be redundant and long range to meet these internal and external requirements. Long-range communications can be augmented through signal support, especially for deep attack or other deep operations.

2-63. Communications, particularly electromagnetic, are subject to disruption. Disruption may result from unintentional friendly interference, intentional enemy action, equipment failure, atmospheric conditions, nuclear blast electromagnetic pulse, or terrain interference. To compensate for these, the commander should—

- Provide for redundancy in means of communication.
- Ensure subordinates understand his intent so they know what to do during communications interruptions.
- Avoid overloading the communications systems.
- Minimize use of the radio.
- Ensure proper signals security and communications security practices are followed.

2-64. All methods of communication should be established in the unit SOPs. Each method listed in the SOP should be practiced during battle drills and during daily flight operations of the unit.

## **RESPONSIBILITIES**

### **COMMUNICATION RESPONSIBILITIES**

2-65. All levels of command gain and maintain communications with the necessary headquarters and personnel. The traditional communications responsibilities are—

- Subordinate to senior. A subordinate unit is responsible for establishing and maintaining communications with a senior unit. An attached unit of any size is considered subordinate to the command to which it is attached.
- Supporting to supported. A supporting unit is responsible for establishing and maintaining communications with the supported unit.
- Reinforcing to reinforced. A reinforcing unit is responsible for establishing and maintaining communications with the reinforced unit.
- Passage of lines. During passage of lines, either forward or rearward, the passing unit is responsible for establishing initial contact with the stationary unit. However, the primary flow of information must be from the unit of contact.

### **LATERAL COMMUNICATIONS**

2-66. Responsibility for establishing (lateral) communications between adjacent units may be fixed by the next higher commander or SOP. If responsibility is not fixed by orders, the commander of the unit on the left is responsible for establishing communications with the unit on the right. The commander of a unit positioned behind another unit establishes communications with the forward unit.

### **RESTORATION**

2-67. Regardless of the responsibility, all units take prompt action to restore lost communications.

## **MEANS OF COMMUNICATION**

2-68. Cavalry uses the full spectrum of communications means.

### **WIRE**

2-69. Wire is normally used for communications within the CP, support areas, and AAs. It is the primary means of communication whenever the situation permits.

### **MESSENGERS**

2-70. Messengers are used between the CP, trains, and higher and lower headquarters. Although ground messengers are slower than other means of communications, air cavalry provides a rapid capability. Aviation messengers may be particularly useful in carrying A&L messages when en route to and from rear AAs. They can be used even if units are in contact and especially

when jamming or interception hampers frequency modulation communication.

## **SOUND AND VISUAL**

2-71. Sound and visual signals are in the SOI or the unit SOP. Signals not included in the SOI may be established by SOP. The battlefield will have many sound and visual cues. Commanders and staff planners carefully determine how sound and visual signals will be used and authenticated. Sound and visual signals include pyrotechnics, hand-and-arm, flag, metal-on-metal, rifle shot, whistles, and bells.

## **COMMERCIAL LINES**

2-72. Commercial lines are used when approved by HHQ. If the unit is forced to withdraw, and with the approval of HHQ, existing wire lines (including commercial lines) are cut and sections removed so the enemy cannot use them.

## **RADIO**

2-73. Cavalry operations normally depend on radio as the primary means of communication. This is particularly so during reconnaissance and security missions. Network discipline and SOP minimize needless traffic. To avoid detection by enemy direction finding equipment, cavalry uses all other means of communication to supplement the radio. Once in contact, the primary means of communication will be FM voice. Radio communications include electromagnetic communications in FM, HF, UHF, and VHF spectrums. If equipped with properly used SINCGARS radios, the enemy should not be able to DF or jam the unit's radio communications while using frequency hop capabilities.

## **REGIMENTAL AVIATION SQUADRON AND DIVISION CAVALRY SQUADRON COMMUNICATIONS**

### **INTERNAL WIRE COMMUNICATIONS NETWORK**

2-74. When possible, the squadron establishes an internal wire communications network at the main TOC and rear CP. At the main TOC, an internal wire communications network integrates all air and ground troops and the main TOC elements, as shown in Figure 2-1. Because reconnaissance assets laagered forward with the main TOC move frequently, they will rarely establish wire communications. However, the rear CP will normally establish an internal wire communications network, as shown in Figure 2-2.



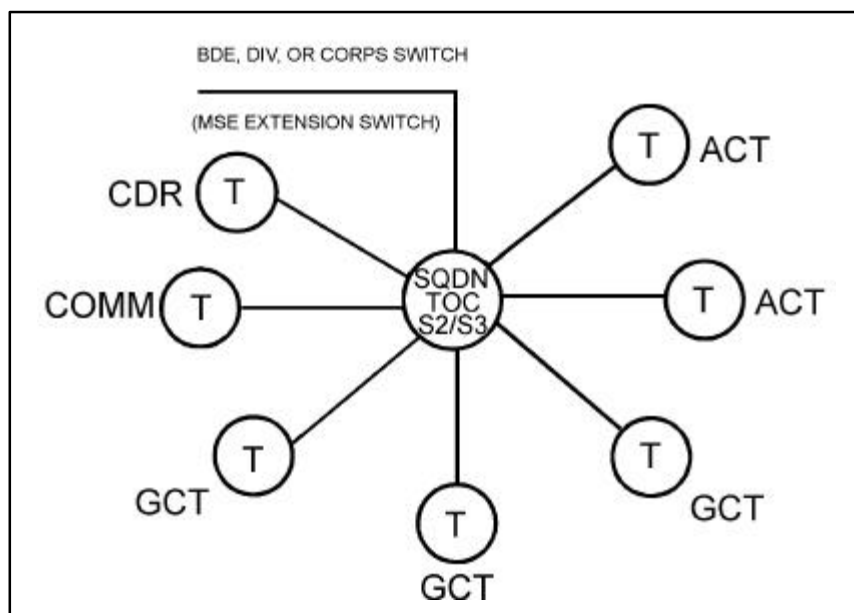
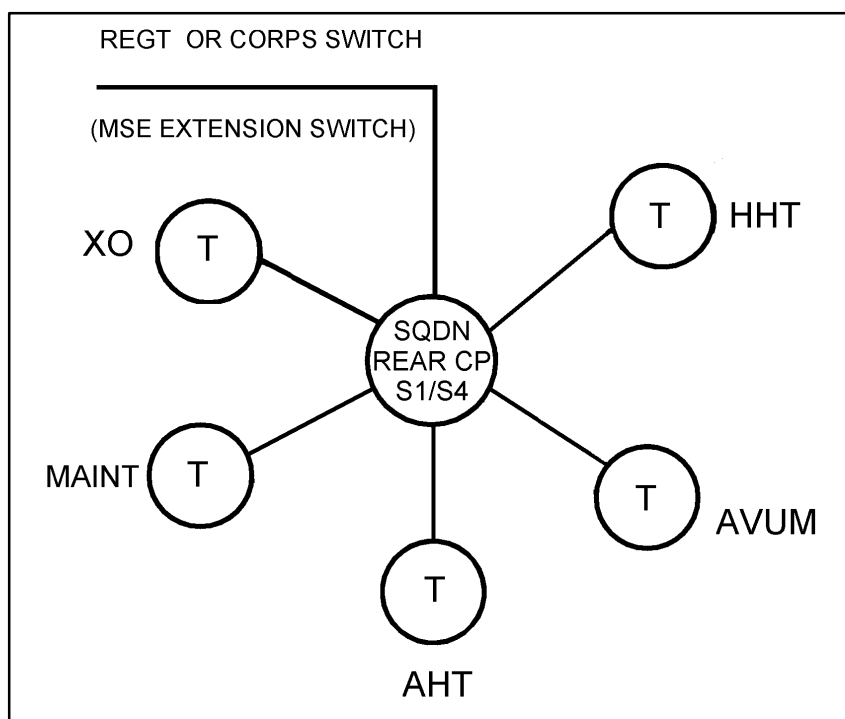


Figure 2-1. Main TOC Internal Wire Communications Network (Armored DCS)



**Figure 2-2. Rear CP Internal Wire Communications Network (RAS)****INTERNAL RADIO NETWORKS**

2-75. Internal radio networks for the RAS are established and maintained primarily with FM, UHF, and VHF secured radios. The radio and station and/or network should be set as follows: FM#1 Secure - Squadron CMD, FM#2 Secure - Supported Unit and/or FS network and/or O&I, UHF (Have Quick II) - Troop Command, and VHF - Platoon CMD (nonsecure). The squadron commander usually communicates with his troop commanders on the squadron command network, which is FM secured. UHF- and VHF-secured radios are also used as backups for the FM-secured radio. The TOC uses the FM-secured radio to communicate with FARP elements and the squadron trains through the squadron A&L network. Communications may also be maintained with the FARP on the squadron command network. If possible the FARP should monitor the command network. If the A&L network is inoperable, the O&I network may be used as an alternative to communicate administrative and logistic requirements. Table 2-1 illustrates the RAS internal radio networks and Table 2-2 illustrates the DCS internal radio networks.

**Table 2-1. RAS Internal Radio Networks**

STATION/ NETWORK	SQDN CMD FM	SQDN CMD AM	SQDN O&I FM	SQDN A/L FM	SQDN FS FM	ARTY FS (DIG)	TRP/ CO CMD FM	TRP FS FM
Sqdn Cmd Grp	X		A	A	XI	XI		
Sqdn TAC CP	N	X	X		X			
Sqdn TOC	X	N	N	O	N	X		
Sqdn CTCP	X		O	N				
Sqdn Rear CP	A			X				
Trp/Co Cdrs	X		O	A	A			A
Troop CP	X	X	X	O/A				O/A
Trp/Co Plts					A	A	X	A
Trp/Co 1SG				X			X	
FARP	X			X				
HHT Cdr	X			X				
N - Network control station X - Enter network. A - Enter network as required. O - Monitor. I - FSO operates on this network.								

Table 2-2. Squadron Internal Radio Networks

STATION/ NETWORK	SQDN CMD FM	SQDN CMD HF (AM)	SQDN O&I FM	SQDN A/L FM	SQDN AVN UHF	SQDN FS FM	ARTY FS (DIG)	GND TRP CMD FM	GND TRP FS FM	AIR TRP UHF/ VHF
Cmd Grp	X		A	A		X1	X1			
TAC CP	N2		X			X				
TOC		X	N	N	O	N	N	X		
CTCP		X		O	N					
Rear CP	A			X						
Sqdn Atchs		X		X	X		X			
Air Trp	X		X	A	A	A	X	A	A	X
Gnd Trp Cdr	X		O	A		A		X	A	
Troop CP	X	X	X	O/A		O/A		N	O/A	
Plts							A		X	A
FIST							X	X	X	N
1SG				X					X	A
FARP	X			X						
Trp Atchs									X	A
N - Network control station X - Enter network. A - Enter network as required. O - Monitor. 1 - FSO operates on this network. 2 - When deployed command NCS.										

## EXTERNAL COMMUNICATION

2-76. The regimental commander normally employs the RAS. The division commander normally employs the DCS. The squadron TOC is primarily responsible for maintaining communications with adjacent and subordinate units. When deployed, the squadron tactical CP may communicate directly with these units. If the situation or terrain prohibits direct contact by the TAC CP, the TOC may act as a communications relay. When his aircraft is airborne, the squadron commander may communicate directly with HHQ, adjacent units, and subordinate elements. Again, the primary means of communication is FM-secured radio. The TOC, TAC CP (if deployed), and squadron commander normally operate command and O&I networks with HHQ. HF radios are also used for communications with HHQ. Other external radio networks may be established with supporting elements such as FA, A<sup>2</sup>C<sup>2</sup>, and forces participating in JAAT operations. In the division cavalry, the squadron maintains communications with the aviation brigade to transmit CSS requirements and to keep the brigade informed of the squadron situation. When employed by the aviation brigade or another maneuver headquarters, the squadron maintains its command and O&I networks with the brigade's main CP. Table 2-3 illustrates the radio networks required of the RAS in the ACR networks and Table 2-4 illustrates the external radio networks required of the DCS.

Table 2-3. RAS Requirements in the ACR Networks

STATION/ NETWORK	REGT CMD FM	REGT O&I FM	REGT A/L FM	REGT FS FM	REGT CMD AM	REGT Area Common User
Regt Cmd Grp	X	A		A		X
Regt TAC CP	N	X		X	X	X
Regt Main CP	X	N	X	N	N	X
Regt Rear CP	X		N			X
RAS *	X	X	X	X	A	X
Support Sqdn	X	O/A	X	A	A	X
Separate Trp/Co	X	X	A		A	X
ACS Cmd Grp	X					X
TAC CP	X	X		A	A	X
TOC	X	X	A	X	X	X
RS1/RS4		A	X		A	X
Rear CP			A			
N - Network control station X - Enter network. A - Enter network as required. O - Monitor. * - Enter the A <sup>2</sup> C <sup>2</sup> network as required.						

Table 2-4. Squadron External Radio Networks

DIVISION CONTROL						
STATION/ NETWORK	DIV CMD FM	DIV REAR CMD FM	DIV CMD AM	DIV O&I FM	DIV ACU	DIV A <sup>2</sup> C <sup>2</sup> FM
Cmd Grp *	X	X1		X	X3	
TAC CP *	X2	X2		X2	X3	
TOC *	O/A	O/A1	X	X	X3	X3
CTCP *				O	X3	
Rear CP *						
BRIGADE CONTROL						
STATION/ NETWORK	BDE CMD	BDE O&I FM	BDE A/L FM	DIV ACU FM	AVN BDE UHF	
Cmd Grp *	X	O/A	A		X	
TAC CP *	X2	X				
TOC *	O/A	X	O/A			
CTCP *		O	X4	X		
Rear CP *			X4			
X - Enter network. A - Enter network as required. O - Monitor.						
Notes: 1 - When performing rear operations. 2 - When deployed; otherwise TOC. 3 - Always active. 4 - Network of brigade providing area support. 5 - Division command FM is normally an on-call network. * - Enter the A <sup>2</sup> C <sup>2</sup> network as required.						

## MOBILE SUBSCRIBER EQUIPMENT

2-77. The MSE system is the ACU voice and data communications system in the corps and division AO. It is the backbone of the corps and division communications system and provides voice and data communications from the corps rear boundary forward to the division maneuver battalion's main CP. This includes the RAS. The MSE integrates the functions of transmission, switching, control, COMSEC, and terminal equipment (voice and data) into one system. MSE provides the user with a switched telecommunications system extended by mobile radiotelephone and wire access. Users can communicate throughout the battlefield in either a mobile or static situation. The MSE consists of five functional areas—area coverage, wire subscriber access, mobile subscriber access, subscriber terminals, and system control.

## **TROOP COMMUNICATIONS**

### **RADIO AND WIRE**

2-78. Communications are the key to successful C<sup>2</sup> of the ACT. They are critical to mission accomplishment regardless of the assigned mission. The primary means of communication within the troop and squadron are two FM(SINCGARS), UHF, and VHF radios. The FM1 and/or FM2 SINCGARS radios are generally used to cover a wide array of radio networks. They may be used for digital traffic (situational awareness on the squadron command network), configured as a secure network for voice traffic to the squadron commander, ground cavalry commander, or as a digital TACFIRE network. UHF Have Quick II is the primary network for internal troop operations and for TACAIR. VHF is used as a secondary network for air-to-air communications, and flight following.

2-79. The digital situational awareness network is a radio network designated primarily for the constant transmission of digital information on the battlefield. Digital information traffic along with digital communications shares the network. The squadron AMPS is the network hub at squadron level. Each of the troop AMPS link to the Squadron AMPS using a TCIM. The aircrews link to the network using the ATHS in the aircraft. The squadron AMPS collects SPOTREP, SIT and/or STAT, and BDA reports, and broadcasts updated enemy situation graphics and friendly position graphics. Subscribers can display this information using their company AMPS, aircraft digital map, or HSD.

2-80. To ensure that squadron command directives are met and the ACT is supported by CS and CSS assets, the troop first sergeant monitors both the squadron command network and the administrative and logistics network.

2-81. Logistics and supply operations that demand squadron support are coordinated on the A&L network.

2-82. ACTs have neither the wire nor the field telephone assets to link platoons to a troop network. When the troop is dispersed as in Figure 2-3, lack of wire communications can lead to slow reaction times. To overcome this, a runner can be designated to alert the platoons. In Figure 2-4, troop personnel are closely assembled rather than dispersed. This method should only be used in the squadron field trains area or in a BSA because of the inherent risk of losing those personnel all at once in an unexpected attack.

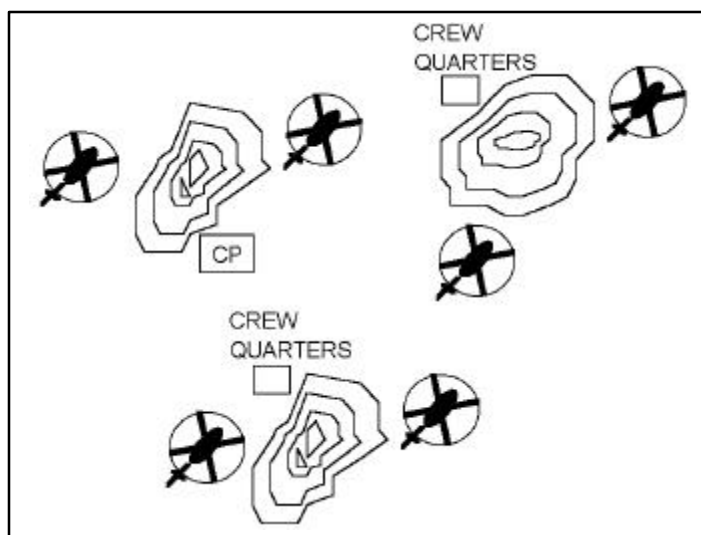


Figure 2-3. Troop Dispersed

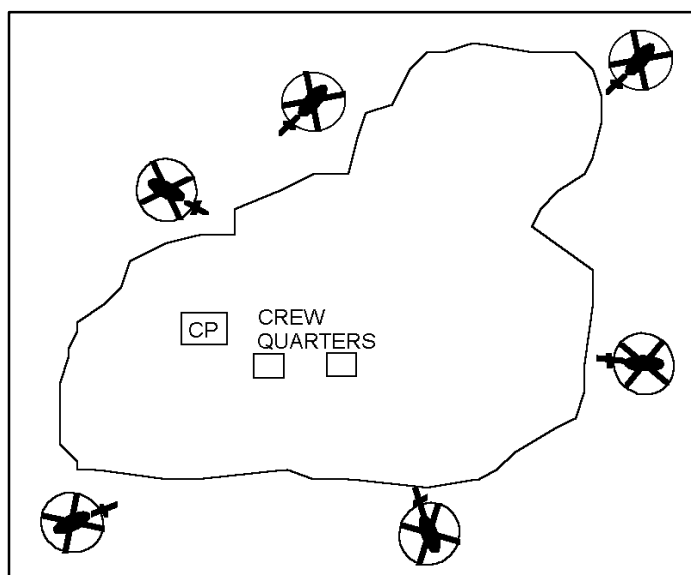


Figure 2-4. Troop Closely Assembled

## NETWORK DIAGRAM

2-83. Division of radio networks within the team and/or troop is a critical task. The use of the FM1 for digital situational awareness with the squadron AMPS makes it a critical network to keep clear. This network keeps the squadron battle staff's moving map updated with the locations of all aircraft on the mission as it develops.

2-84. The three major FM users in the squadron must be divided between all aircraft on the mission. The AMC must monitor the squadron command voice network. The team leader normally takes the GCT commander in sector, and one aircraft per team may be designated to link into the TACFIRE network.

## **REPORTING PROCEDURES**

2-85. Managing the flow of information is another critical task. Multitudes of techniques exist for this information flow. Digital networks present certain advantages coupled with complex C<sup>2</sup> problems. Squadrons using an AMPS with a TCIM should direct crews to send SPOTREPs, BDA, and SIT and/or STAT reports digitally to take advantage of the AMPS position reporting capability and its ability to instantly portray critical combat information.

2-86. The situation (METT-T) and commander's intent will dictate the routing of digital information.

2-87. Digital traffic is commonly routed through the normal chain of command within the troop prior to being relayed to squadron to keep the team leader and AMC informed on all the combat information. However, depending on the volume of traffic, this technique tends to overload team leaders with routine reading, readdressing, and sending information while trying to perform their own duties in the reconnaissance or screening effort. This also increasingly ties up the digital network with messages being sent and resent during times with large numbers of contacts.

2-88. To reduce traffic on the digital network is to direct crews to report combat information directly to squadron, with a short voice SALT report (brevity is the concern and the reason for not using SALUTE) to the team leader and/or AMC on UHF internal. This keeps the combat information flowing rapidly to the squadron commander and minimizes the possibility of the team leader and/or troop commander's ATHS buffer from becoming overloaded and losing critical information.

2-89. In the event that aircrews conducting tactical operations are unable to transmit digitally to squadron due to LOS limitations, the AMC may elect to act as a digital retransmission, and collect digital reports for resubmission to squadron. This decision may restrict the AMC's ability to maneuver as desired but keeps critical lines of communication open and allows the troop to accomplish the mission.

2-90. Video imagery sent using Video Xlink requires the transmitting aircraft to address the image directly to the squadron AMPS where it will be linked to the spot report icon shown on the moving map display. In a situation where video imagery is required from the troop and direct digital communication is impossible, the only viable means for mission accomplishment may be the establishment of a permanent airborne or ground based retransmission station.



## **OPERATIONS SECURITY**

2-91. All measures taken to deny the enemy information about friendly forces and operations are called OPSEC. The OPSEC concept includes all security measures that allow units to achieve and maintain surprise. OPSEC consists of physical security, information security, signal security, deception, and countersurveillance. Since these categories are interrelated, the ACT commander normally chooses to employ multiple techniques to counter a threat. He analyzes hostile intelligence efforts and vulnerabilities, executes OPSEC countermeasures, and surveys the effectiveness of countermeasures. The troop commander can then counter specific hostile intelligence efforts. Aviation OPSEC is described in more detail in FMs 1-100 and 1-111. Some considerations for OPSEC include—

- Downed aircraft destruction procedures.
- Power settings for FM radio transmissions.
- Radio communications restrictions (digital, KY, SINCGARS).
- Light usage (aircraft lighting, AA light discipline, IR searchlight).
- Staggered departures from TAA and/or FAA.

## **SECTION V—COMMAND, CONTROL, COMMUNICATIONS, AND INTELLIGENCE ENHANCEMENT**

### **LINES OF COMMUNICATION**

2-92. The air cavalry provides R&S of lines of communication to ensure their security. Lines of communication include roads, supply routes, relay and retransmission sites, critical signal nodes, microwave facilities, and telephone wire structures and systems. The air cavalry may conduct reconnaissance operations before the establishment of a communications site. Squadron elements may also maintain surveillance of the area or provide a security screen during establishment of the site. The air cavalry conducts route reconnaissance missions to maintain surveillance of specified roads and supply routes. It conducts surveillance on a periodic basis or for a specified time to keep the route open and update information about the route. The air cavalry performs the same type of surveillance for telephone or power line structures to prohibit or decrease the likelihood of sabotage.

### **MESSAGE AND DOCUMENT DELIVERY**

2-93. The electronic transmission of messages and documents may not be possible because of nuclear weapons or munitions employment or enemy jamming operations. The air cavalry may be used to deliver messages and documents in these cases or when radio listening silence is imposed or equipment is inoperable. Messages include combat plans and orders, written coordination and control measures, and graphics. Documents delivered include critical reports or reports essential for sustaining combat operations. They also include public affairs materials required to sustain public understanding and support for the Army's continued operations.

## **PERSONNEL AND EQUIPMENT TRANSPORTATION**

2-94. When necessary, squadron elements provide transportation for commanders so that they can easily see the battlefield and thus more effectively control their units. This task is usually conducted in conjunction with normal squadron operations. The air cavalry can help effect vital liaison between the units. Squadron elements may be employed to verify unit locations or even their existence. For example, if the regimental commander loses communications with a subordinate squadron, he may ask the air cavalry commander to verify the squadron's location and status. The air cavalry can also serve as an additional supervisory link for the execution of plans and orders. Command aviation assets of the regiment or corps do most of the C<sup>3</sup>I enhancement discussed above. However, because the air cavalry frequently operates forward and is familiar with the area, it may often be tasked with C<sup>3</sup>I enhancement functions.

2-95. The air cavalry is capable of inserting and resupplying ground retransmission teams into inaccessible sites. Air cavalry aircraft may carry retransmission equipment, relay equipment, or both. Aircrews can also perform the retransmission or relay mission with onboard equipment while airborne. In this role, the air cavalry is integrated to facilitate movement of the main TAC CP for the regiment or corps. During a CP move or as a contingency, the air cavalry may provide alternate TOC or CP facilities for the regiment or corps.

## **SECTION VI—DIGITAL COMMUNICATION SYSTEMS**

### **DIGITAL SYSTEMS AND EQUIPMENT**

2-96. This section contains brief descriptions of current aviation digital systems that will be fielded to or will interface with both the regimental air squadrons and divisional cavalry squadrons.

#### **OH-58D KIOWA WARRIOR**

2-97. OH-58D KWs will have the following improvements installed:

- Embedded GPS and/or INS. Embedded GPS and/or INS is identified by the acronym EGI. The EGI replaces the current Doppler and/or AHRS combination and provides increased navigation accuracy.
- IMCPU. The IMCPU provides a new digital map display on the MFD.
- IDM. The IDM is the KW's link to the digital battlefield. It replaces the ATHS of the current KW and allows digital data to be transferred over aircraft radios using VMF. The KW can operate in the tactical internet and FS network.
- SINCGARS SIP radio. The SINCGARS SIP radio replaces the FM1 and FM2 radios and the associated DRA in the current KW. The SINCGARS SIP radio provides faster data communication in a jamming or high noise environment. The SINCGARS SIP incorporates secure capabilities via embedded KY-58s.

- VIXL. The VIXL provides the KW with the capability to send and receive still frame images over one of the FM radios. The VIXL consists of a circuit card installed in the IMCPU. VIXL ground stations will consist of an AMPS with a TCIM and a SINCGARS radio. The ground stations will be used to provide VIXL images in TOCs on the ground.
- IMSP. The IMSP is a direct replacement for the existing MSP in the KW. The IMSP provides enhanced targeting through—
  - Improved tracking, lock-on, and reacquisition.
  - TVS) and/or TIS split screen (provides TV and TIS images on the same display page).
  - Auto cue (detects and highlights moving targets).
  - Multiple target tracking (tracks up to six targets within the system FOV).

## **AH-64D LONGBOW APACHE**

2-98. The Longbow system consists of an integrated millimeter wave FCR mounted on top of the AH-64 Apache's main rotor mast. Additionally, the mast-mounted sensor contains the RFI. The RFI detects threat AD system radars. The LBA is able to detect, classify, prioritize, and engage targets with Hellfire missiles without visually acquiring the target.

2-99. The LBA will provide increased data transfer capabilities (such as FCR targets, shot at file, present position, and free text messages) using the IDM.

2-100. The DTM mounted in the LBA is used to quickly upload the mission data and initialize aircraft systems for the mission. When the mission is complete, the DTM retains all mission data to carry back to the AMPS for the debrief. Additionally, the DTM provides the maintenance section with data for troubleshooting—reducing maintenance downtime.

## **AVIATION MISSION PLANNING SYSTEM**

2-101. The AMPS is an automated aviation mission planning and/or synchronization tool designed specifically for the aviation commander. The two levels of AMPS are brigade and/or squadron and troop level. Each level provides the automated capability to plan and synchronize aviation missions.

2-102. The functions of AMPS can be broken into three areas—tactical planning, mission management, and maintenance management functions. The tactical planning function includes planning tasks normally performed at the brigade and/or squadron level, such as intelligence data processing, route planning, communication planning, navigation planning, and mission briefing and/or review. The mission management function can be associated with planning that occurs at the troop and/or platoon level. These tasks include aircraft performance planning, weight and balance calculations, flight planning, fighter management planning, and OPORD and/or OPLAN changes. The troop and/or platoon will also be capable of mission briefing and/or rehearsal. The maintenance management function is provided primarily for the unit level maintenance section. This section will permit

postmission downloading of LBA and KW aircraft data for maintenance personnel.

2-103. AMPS data may be saved onto a DTC that is used to upload mission data to the host aircraft (LBA and OH-58D KW) via the data transfer module. The data created at squadron level are given to the troop level for detailed troop and/or platoon planning. Printed (hard copy) output products include weight and balance forms, strip maps, flight plans, OPORDs, route navigation cards, and communications cards.

2-104. AMPS map data bases are created from ADRG CD-ROM and DTED media available from the NIMA. The maps contained on the CD-ROMs are digitally cut and pasted for a particular AO and stored for ready access on the magneto optical drive disks or the AMPS hard drive. Databases of different AOs or various scale maps can be maintained and organized on disks.

**NOTE:** DTED levels are identified as 1 through 5. At DTED Level 5, AMPS does not have sufficient storage or processing power for detailed terrain analysis.

2-105. AMPS can be used for detailed terrain analysis, for example, intervisibility LOS between a battle position and an EA. Using the perspective view feature, pilots can gain a feel for prominent terrain along the route to be flown.

2-106. AMPS is an additional automation tool that the aviation commander and staff have to manage battlefield information. AMPS is not a C<sup>2</sup> system. It is a mission planner that applies the technical capabilities of modern aircraft to the tactical situation on the battlefield. AMPS and MCS are complimentary systems. MCS receives and transfers enemy locations, friendly locations, preplanned artillery locations, and forecast weather to AMPS. AMPS applies the technical characteristics of the aircraft (speed, range, and payload) to give the commander mission alternatives. AMPS also provides the digital transfer device to move this information to the onboard computers to initialize systems on selected aircraft. At the end of a mission, the mission history is downloaded to AMPS. Postmission products such as enemy locations and battle damage assessment can be provided to MCS to update the tactical situation. AMPS will also be used (with a TCIM) to view VIXL imagery sent from the KW.

## **AVIATION TACTICAL OPERATIONS CENTER**

2-107. The AVTOC is mounted on a HMMWV with a SICP-RWS, and high mobility trailer. It is used by the ATF in planning and controlling its forces on the digitized battlefield. It is an integrated system of ATCCS workstations, AMPS, and other brigade and below C<sup>2</sup> equipment and includes a suite of radios and modems. The communications suite includes VHF AM, UHF AM, VHF FM SINCGARS-SIP, Have Quick II, SATCOM, and HF NOE communication radios. The AVTOC staff receives and correlates information from combined arms and joint sources.

## **IMPROVED DATA MODEM**

2-108. The IDM is used on the LBA, the OH-58D KW, and in the AVTOC. The IDM is a modem that passes targeting or situation awareness information to and from airborne or ground platforms (digital and analog). The IDM contains two modems, which support 4 links, and one generic interface processor used for LINK and/or MESSAGE processing (link formats include TACFIRE, VMF, and AFAPD). The IDM provides a demonstrated interoperable capability between the US Air Force, Army, and Marines in pursuit of joint digitization of the battlefield. The IDM provides digital connectivity that was previously not available. The IDM can operate simultaneously analog, digital, and secure digital (KY-58 or KY-100). It is further hardware and software expandable.

## **MANEUVER CONTROL SYSTEM AND/OR PHOENIX**

2-109. The Army has developed and is currently upgrading a computer-aided C<sup>2</sup> system to support the maneuver commander and his staff. The system, designated the MCS/P, will be the information system for the force level commander and his staff. It will provide automated C<sup>2</sup> support to enhance the quality and shorten the duration of the decisionmaking cycle. The MCS/P will integrate the maneuver function with the C<sup>2</sup> systems of the other four major functional areas (FS, AD, IEW, and CSS) as they become available. It will assist in managing information and in executing the commander's concept of operations. The MCS/P will provide automated assistance in coordinating plans, disseminating orders and guidance, and monitoring and supervising operations.

2-110. The MCS/P is the keystone of the future ABCS that will provide automated C<sup>2</sup> from echelons above corps down to the platoon level. As we move toward the 21st century, the Army will continue to pursue advanced technology and operational concepts that will give our soldiers an information advantage over potential adversaries.

## **ENHANCEMENTS TO RECONNAISSANCE OPERATIONS**

2-111. The main objective of reconnaissance operations is to gather information on a particular location, area, route, and enemy. If available, national assets can cue and focus aviation reconnaissance, saving time and effort. With the IDM, the OH-58D KWs are able to send timely and accurate data to each other and digital reports via secure voice to the commander in the AVTOC. The IDM and/or SINCGARS SIP allows digital communication with IDM equipped platforms and Appliqué, which will enable communication with the AVTOC and C<sup>2</sup>V. VMF messages may be transmitted using the IDM.

2-112. The EGI increases navigation accuracy and target designation and/or location accuracy. Navigation accuracy is within 16 meters.

2-113. When developed and fielded, HF radios will provide long range and NOE voice only communications capability of at least 300 km.

2-114. The robust sensor capabilities of the OH-58D KW greatly aid it in its mission as an armed reconnaissance aircraft. The IMSP provides improved

tracking via split screen target track in both TIS and TVS modes. It is able to track up to six targets simultaneously. Target detection is aided by moving target detection and automatic reacquisition of targets lost due to obstruction.

2-115. With VIXL, the KW transmits still video images to the commander (via an appropriately equipped AMPS) at any time during the mission. These images are supplemented with supporting voice and/or embedded message comments on NAI, TAIs, EEI, PIR, and CCIR. The KW can act as a photograph and/or HUMINT source with which the commander can clarify his picture of the battlefield. Unlike UAVs, the KW can provide the ability to immediately maneuver and develop the situation with direct and indirect fires. VIXL is used when near real-time images are required for decision support. When immediate images are not required, and imagery will be reviewed at a later time, a more efficient method is for the KWs to video tape the areas of interest. VIXL-use criteria should be part of mission planning and crew briefing.

2-116. The ASAS-RWS should be used to receive any possible enemy locations, these locations should then be sent to the aircraft to conduct the reconnaissance. The ground commander should coordinate with the aviation commander to have areas of interest reconnoitered. The aircraft then pass this information to the commander in the AVTOC or C<sup>2</sup> aircraft and ground commander by voice over secure communications. SPOTREPs and SITREPs should be sent to the commander every 10 to 15 minutes regardless of the situation. A report of "no enemy contact" or "continuing mission" can be just as informative as a report of positive enemy locations.

2-117. The position of the commander is METT-T dependent. If enemy contact is likely, the commander may be in the C<sup>2</sup> aircraft to readily employ the air assets and receive and/or send information to HHQ. If enemy contact is not likely, the commander may remain in the AVTOC and develop the situation of the reconnaissance as reports are received.

2-118. To sustain the reconnaissance over long periods of time, FARPs must be established and moved frequently to support the operations. With the AMPS new FARP locations are graphically viewed for favorable ground conditions and proper concealment. After the locations are determined, the new grid locations are passed to the aircraft conducting the reconnaissance. The LBA and KW can plot the new locations in the aircraft to appear on the aircraft's map display to assist with navigation. Coordination with FARP and CTCP personnel is conducted via the Appliqué.

2-119. Reconnaissance objectives and/or missions should be tape recorded for subsequent review and analysis.

2-120. If available, UAVs may be used to precede (focus), complement (simultaneous), or confirm (follow-on) aircraft reconnaissance efforts.

## **ENHANCEMENTS TO SECURITY OPERATIONS**

2-121. During security operations, the digitized aviation force has some distinct advantages. However, these must be weighed against the factors of METT-T. Sensor and long range communications capabilities allow greater

dispersion, which equates to survivability, stealth, and greater coverage. These must be weighed against factors such as with greater distance soft targets may go undetected. Passage of lines coordination may also be complicated by the dispersion of multiple teams rather than the coordinated movement of platoon or troop formations. However, digital connectivity aids ground and/or air situation continuity.

2-122. The increased lethality and sensor capabilities of the LBA may reduce the number of assets required to provide security over a given area. Dispersion will be limited by LOS radios and/or FCR coverage (overlapping coverage). KWs used in the security role have non-LOS radios for communications over extended ranges; however, dispersion will also be limited by sensor connectivity. In either case, the ATF is not able to hold terrain with its organic assets, but can dominate a larger area given the same number of assets than a nondigitized force. Decreased reliance on visual detection and the ability to leverage theater assets for enemy detection, cueing, and tracking shifts security operations from terrain orientation to force orientation.

## **ENHANCEMENTS TO CLOSE OPERATION**

### **AH-64D IN THE CLOSE BATTLE**

2-123. AH-64D attack units would attack lead or second echelon units that are moving through the deep area or have arrived at the close area. The AH-64 units may be assigned different EAs than the ground units to best coordinate the fires of the total combined arms team and destruction of the enemy force.

2-124. As a reconnaissance asset, the FCR will allow LBA AMCs to quickly and accurately pinpoint the location of vehicles for the ground commander. Once ground forces are located and positive communication with the ground forces commander has been established, the attack unit can orient on the enemy force for the attack. In the close battle area of the battlefield where the helicopter is vulnerable to the large number of threat systems, the RF missiles will enable attack aircraft to be unmasked for a minimum amount of time. This greatly enhances their survivability. The full potential of the Longbow system can not be realized in close battle if opposing forces quickly become mixed and identification of friend or foe becomes a major concern,

2-125. The LBA with radar and RF missiles can be used in close proximity to friendly forces when the aircrew can achieve positive IFF by linking the EO sensors and confirming visually. The LBA can still fire the SAL HF missile, which would be most appropriate when friendly and threat vehicles are in close proximity to one another. Also, RF missiles should only be fired with a TADS confirmation of the target if there is any doubt as to the identification of the friend or foe.

2-126. One method of employment when IFF is not quickly or easily confirmed would be to use the FCR to detect and track the enemy force and continuously report the situation to the ground commander.

**AH-64D IN REAR OPERATIONS**

2-127. Rear area operations are particularly susceptible to varying levels of attack. The threat could be a Level-I raid into a supply area where LBA ground targeting would be of limited value because of the chaotic situation and intermingling of friendly and enemy forces. On the other extreme the threat could be a break through element in an area isolated from friendly forces. In this situation a LBA unit could rapidly strike the armor formation. The FCR is also of great value in locating enemy en route to their objectives.